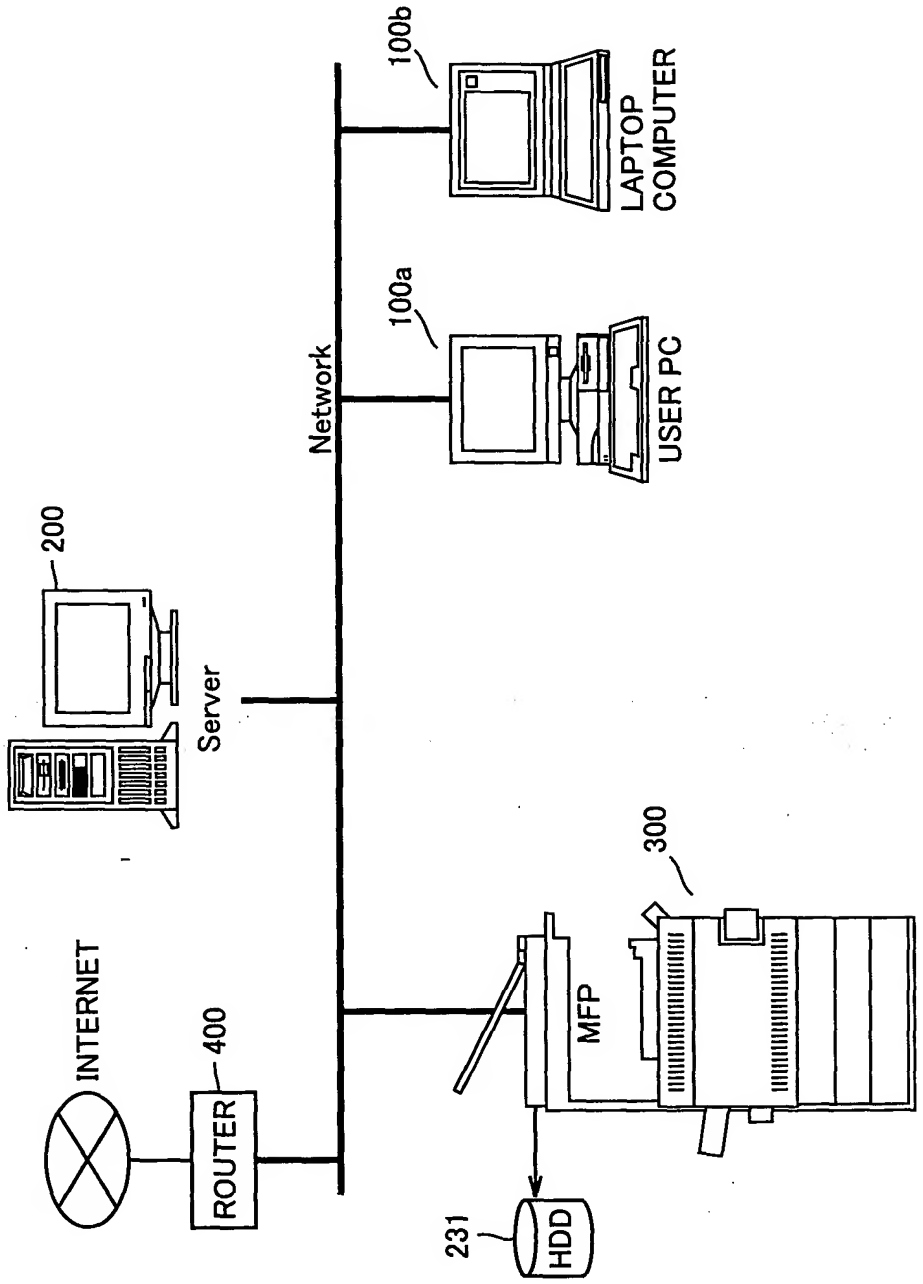

100b
LAPTOP COMPUTER
100a
USER PC
Network
200
Server
300
MFP
INTERNET
400
ROUTER
231
HDD

FIG.1

FIG.2

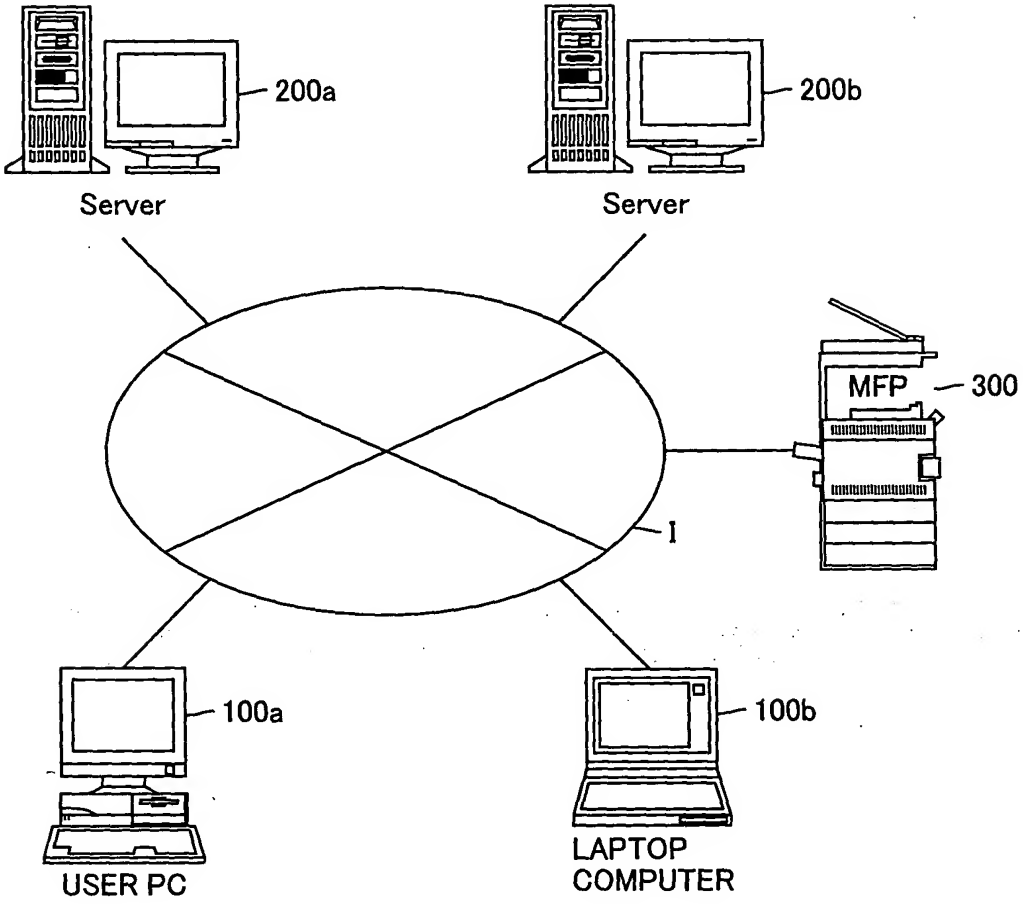

200a
200b
Server
Server
MFP
300
1
100a
100b
USER PC
LAPTOP
COMPUTER

FIG.3

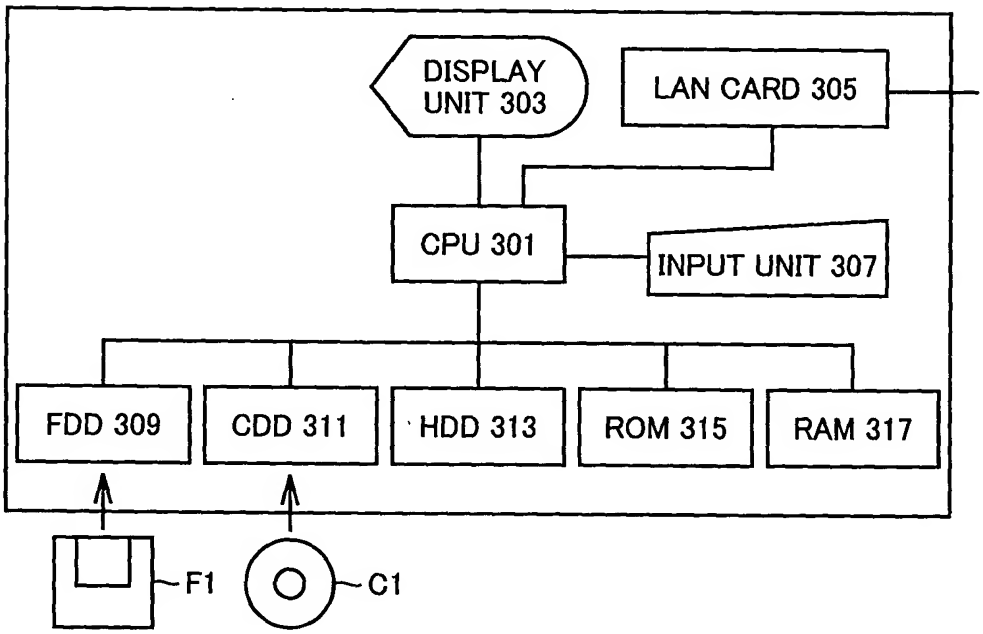

DISPLAY UNIT 303
LAN CARD 305
CPU 301
INPUT UNIT 307
FDD 309
CDD 311
HDD 313
ROM 315
RAM 317
F1
C1

FIG.4

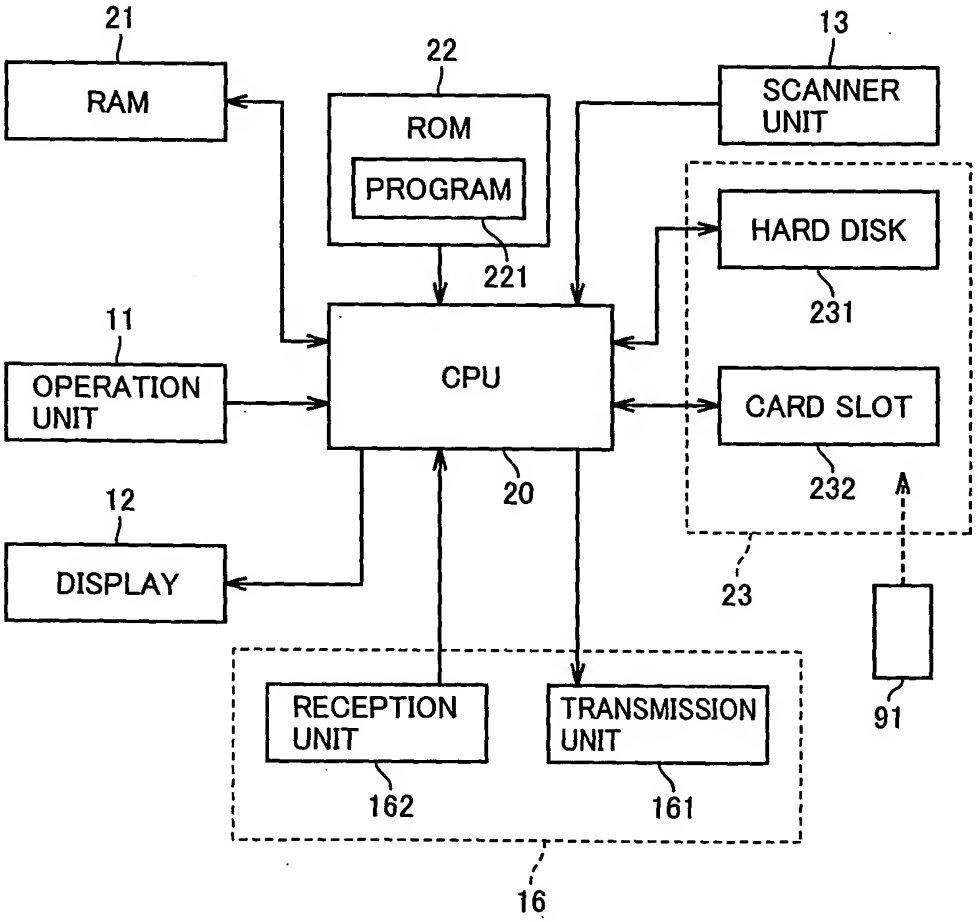

21
RAM
22
ROM
PROGRAM
221
13
SCANNER UNIT
HARD DISK
231
11
OPERATION UNIT
CPU
CARD SLOT
20
232
12
DISPLAY
23
91
RECEPTION UNIT
TRANSMISSION UNIT
162
161
16

FIG.5

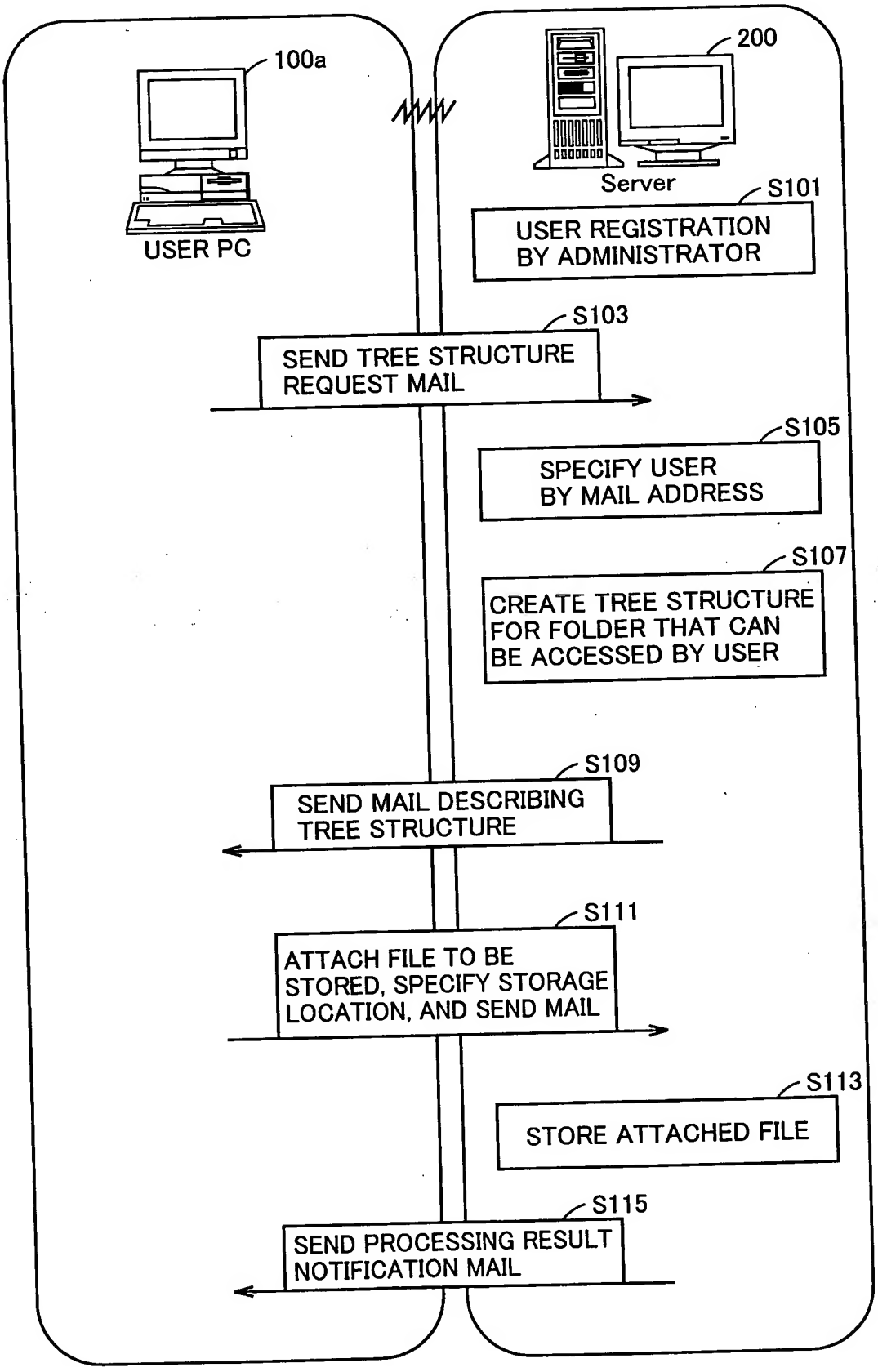

100a
USER PC
200
Server
S101
USER REGISTRATION BY ADMINISTRATOR
S103
SEND TREE STRUCTURE REQUEST MAIL
S105
SPECIFY USER BY MAIL ADDRESS
S107
CREATE TREE STRUCTURE FOR FOLDER THAT CAN BE ACCESSED BY USER
S109
SEND MAIL DESCRIBING TREE STRUCTURE
S111
ATTACH FILE TO BE STORED, SPECIFY STORAGE LOCATION, AND SEND MAIL
S113
STORE ATTACHED FILE
S115
SEND PROCESSING RESULT NOTIFICATION MAIL

FIG.6

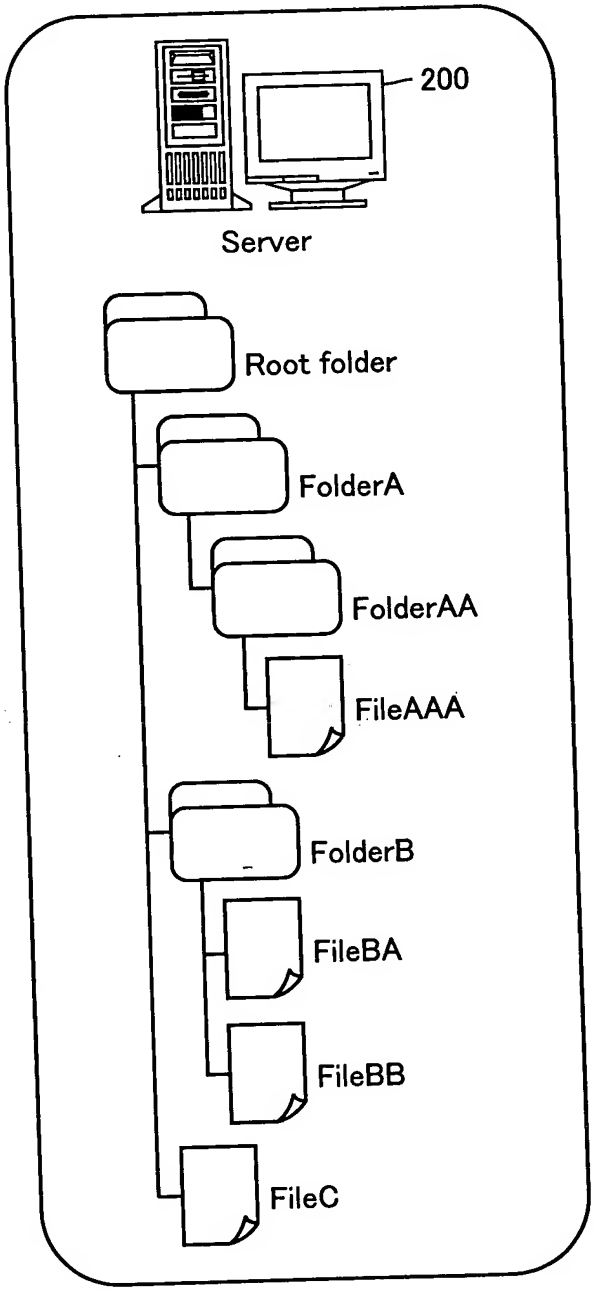

200
Server
Root folder
FolderA
FolderAA
FileAAA
FolderB
FileBA
FileBB
FileC

FIG.7

SUBJECT:Re:Request Tree
BODY: PASSWORD IS INCORRECT

FIG.8

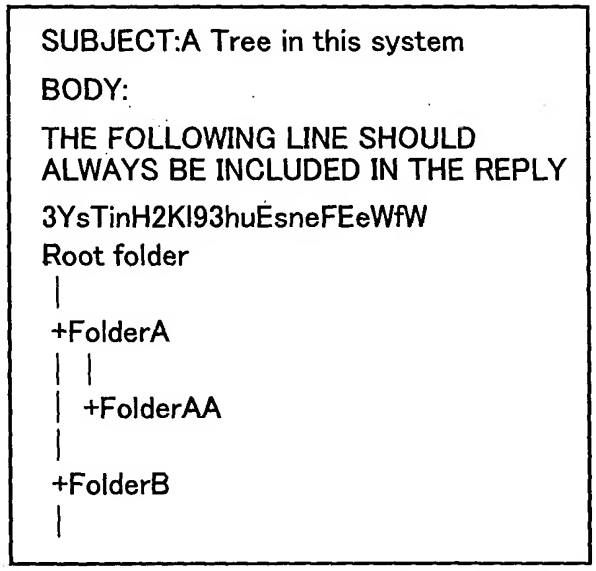

SUBJECT:A Tree in this system
BODY:
THE FOLLOWING LINE SHOULD ALWAYS BE INCLUDED IN THE REPLY
3YsTinH2KI93huEsneFEeWfW
Root folder
+FolderA
+FolderAA
+FolderB

FIG.9

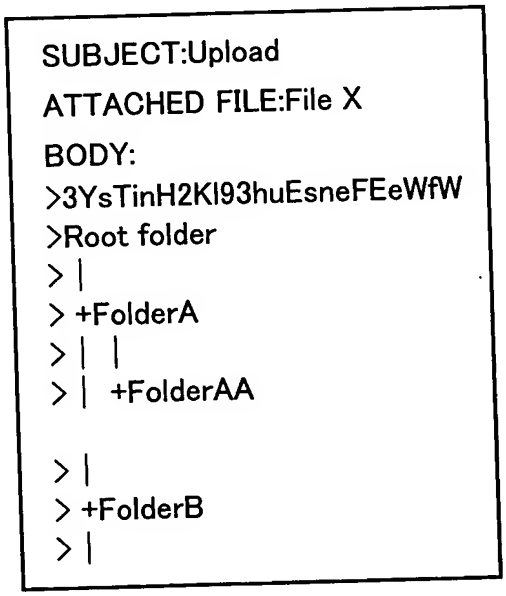

SUBJECT:Upload
ATTACHED FILE:File X
BODY:
>3YsTinH2KI93huEsneFEeWfW
>Root folder
> |
> +FolderA
> | |
> | +FolderAA
> |
> +FolderB
> |

FIG.10

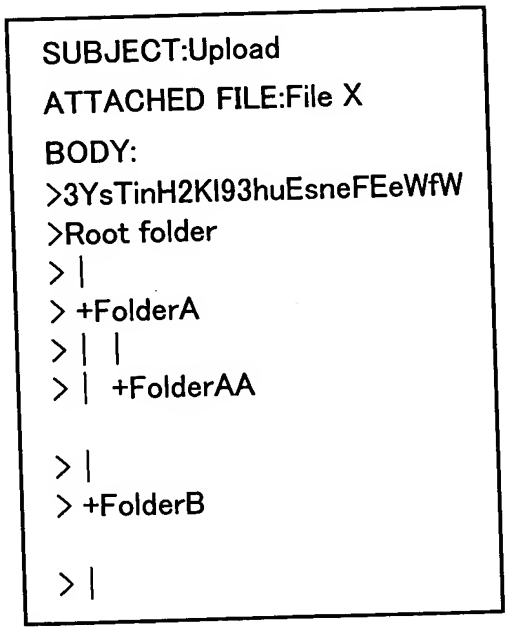

SUBJECT:Upload
ATTACHED FILE:File X
BODY:
>3YsTinH2KI93huEsneFEeWfW
>Root folder
> |
> +FolderA
> | |
> | +FolderAA
> |
> +FolderB
> |

FIG.11

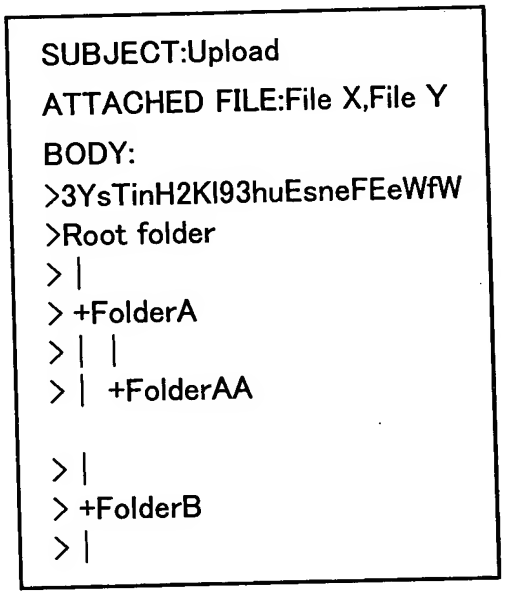

SUBJECT:Upload
ATTACHED FILE:File X,File Y
BODY:
>3YsTinH2KI93huEsneFEeWfW
>Root folder
> |
> +FolderA
> | |
> | +FolderAA
> |
> +FolderB
> |

FIG.12

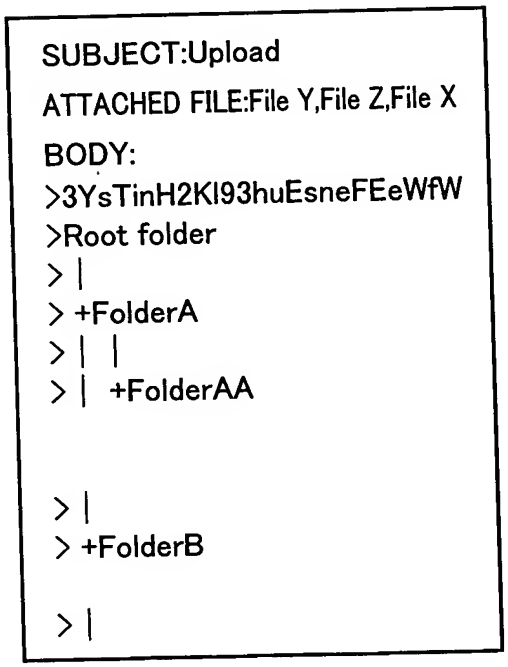

SUBJECT:Upload
ATTACHED FILE:File Y,File Z,File X
BODY:
>3YsTinH2KI93huEsneFEeWfW
>Root folder
> |
> +FolderA
> | |
> | +FolderAA
> |
> +FolderB
> |

FIG.13

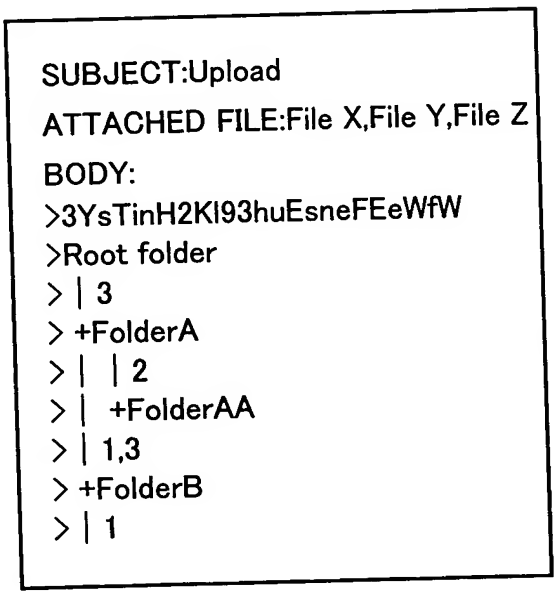

SUBJECT:Upload
ATTACHED FILE:File X,File Y,File Z
BODY:
>3YsTinH2KI93huEsneFEeWfW
>Root folder
> | 3
> +FolderA
> | | 2
> | +FolderAA
> | 1,3
> +FolderB
> | 1

FIG.14

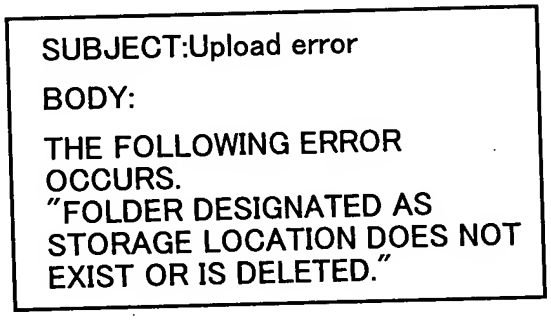

SUBJECT:Upload error
BODY:
THE FOLLOWING ERROR OCCURS.
"FOLDER DESIGNATED AS STORAGE LOCATION DOES NOT EXIST OR IS DELETED."

FIG.15

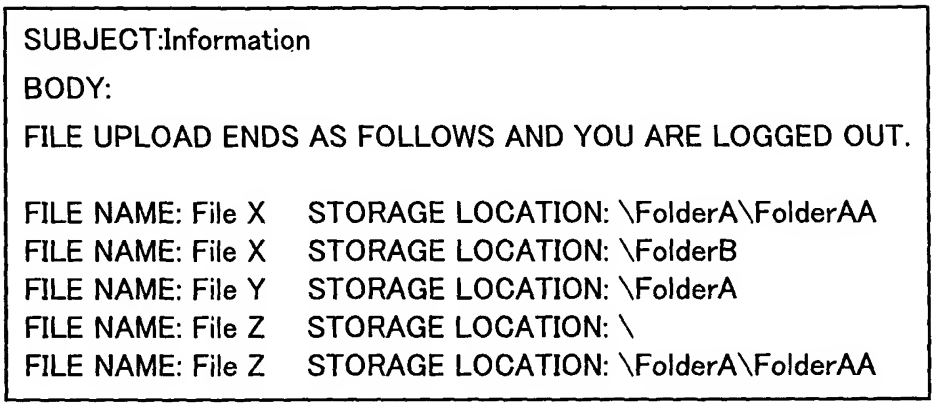


FIG.16

USER REGISTRATION INFORMATION

USER'S ADDRESS	USER NAME	GROUP	ACCESS RIGHT	PASSWORD
• • • •	• • • •	• • • •	• • • •	• • • •
• • • •	• • • •	• • • •	• • • •	• • • •

FIG.17

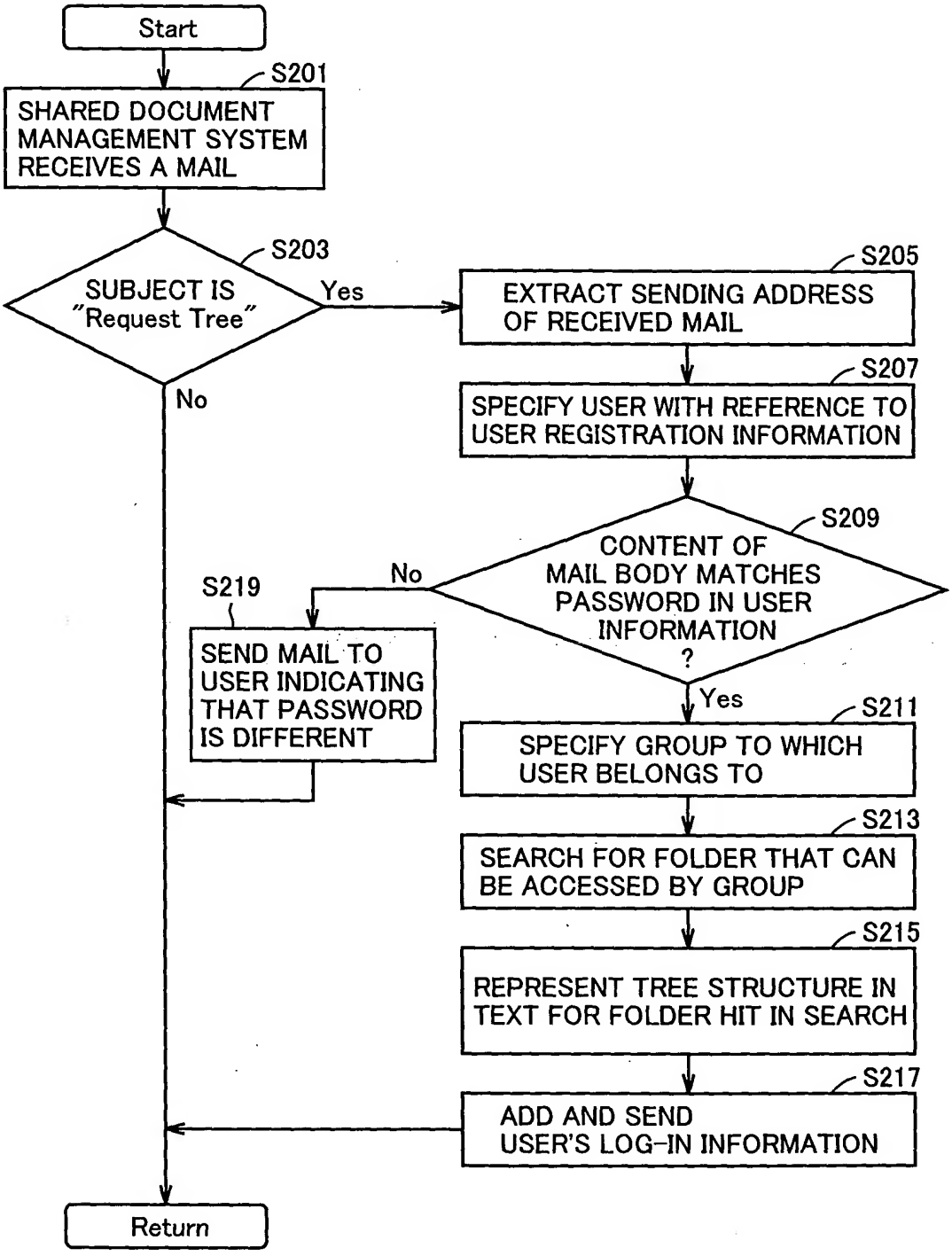

Start
S201
SHARED DOCUMENT MANAGEMENT SYSTEM RECEIVES A MAIL
S203
SUBJECT IS "Request Tree"
Yes
No
S205
EXTRACT SENDING ADDRESS OF RECEIVED MAIL
S207
SPECIFY USER WITH REFERENCE TO USER REGISTRATION INFORMATION
S209
CONTENT OF MAIL BODY MATCHES PASSWORD IN USER INFORMATION ?
No
Yes
S219
SEND MAIL TO USER INDICATING THAT PASSWORD IS DIFFERENT
S211
SPECIFY GROUP TO WHICH USER BELONGS TO
S213
SEARCH FOR FOLDER THAT CAN BE ACCESSED BY GROUP
S215
REPRESENT TREE STRUCTURE IN TEXT FOR FOLDER HIT IN SEARCH
S217
ADD AND SEND USER'S LOG-IN INFORMATION
Return

FIG.18

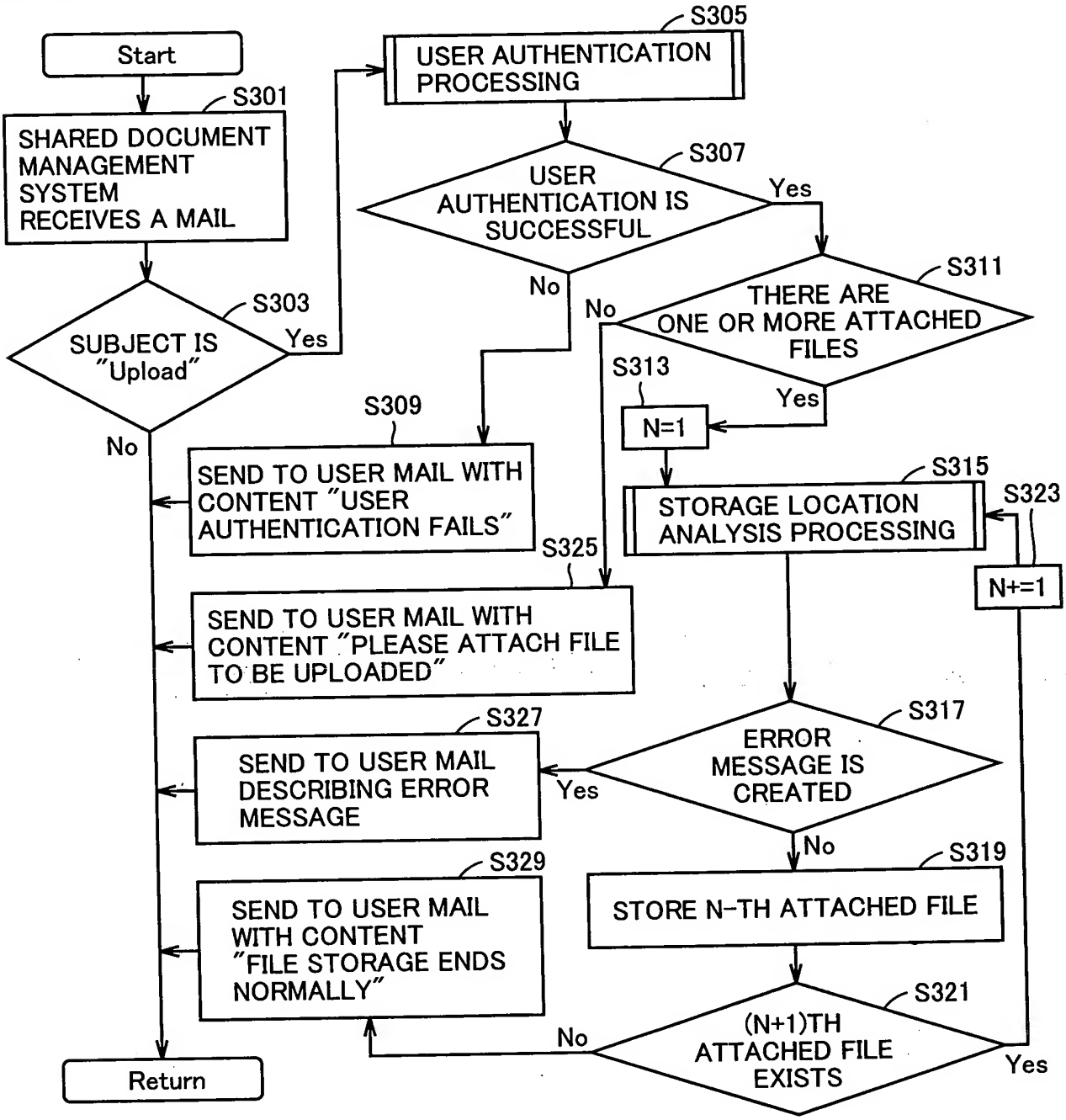

Start
S301
SHARED DOCUMENT MANAGEMENT SYSTEM RECEIVES A MAIL
S303
SUBJECT IS "Upload"
Yes
No
S305
USER AUTHENTICATION PROCESSING
S307
USER AUTHENTICATION IS SUCCESSFUL
Yes
No
S309
SEND TO USER MAIL WITH CONTENT "USER AUTHENTICATION FAILS"
S311
THERE ARE ONE OR MORE ATTACHED FILES
No
Yes
S313
N=1
S315
STORAGE LOCATION ANALYSIS PROCESSING
S323
N+=1
S325
SEND TO USER MAIL WITH CONTENT "PLEASE ATTACH FILE TO BE UPLOADED"
S317
ERROR MESSAGE IS CREATED
Yes
No
S327
SEND TO USER MAIL DESCRIBING ERROR MESSAGE
S319
STORE N-TH ATTACHED FILE
S321
(N+1)TH ATTACHED FILE EXISTS
No
Yes
S329
SEND TO USER MAIL WITH CONTENT "FILE STORAGE ENDS NORMALLY"
Return

FIG.19

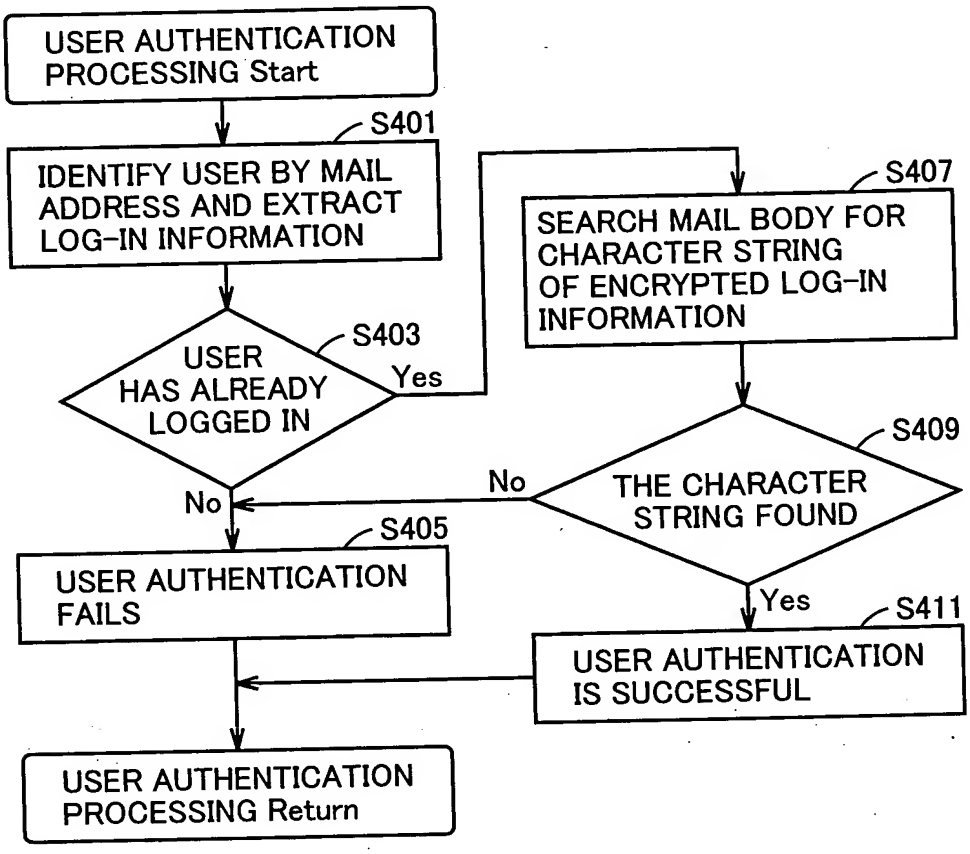

USER AUTHENTICATION PROCESSING Start
S401
IDENTIFY USER BY MAIL ADDRESS AND EXTRACT LOG-IN INFORMATION
S403
USER HAS ALREADY LOGGED IN
Yes
No
S407
SEARCH MAIL BODY FOR CHARACTER STRING OF ENCRYPTED LOG-IN INFORMATION
S409
THE CHARACTER STRING FOUND
No
Yes
S405
USER AUTHENTICATION FAILS
S411
USER AUTHENTICATION IS SUCCESSFUL
USER AUTHENTICATION PROCESSING Return

FIG.20

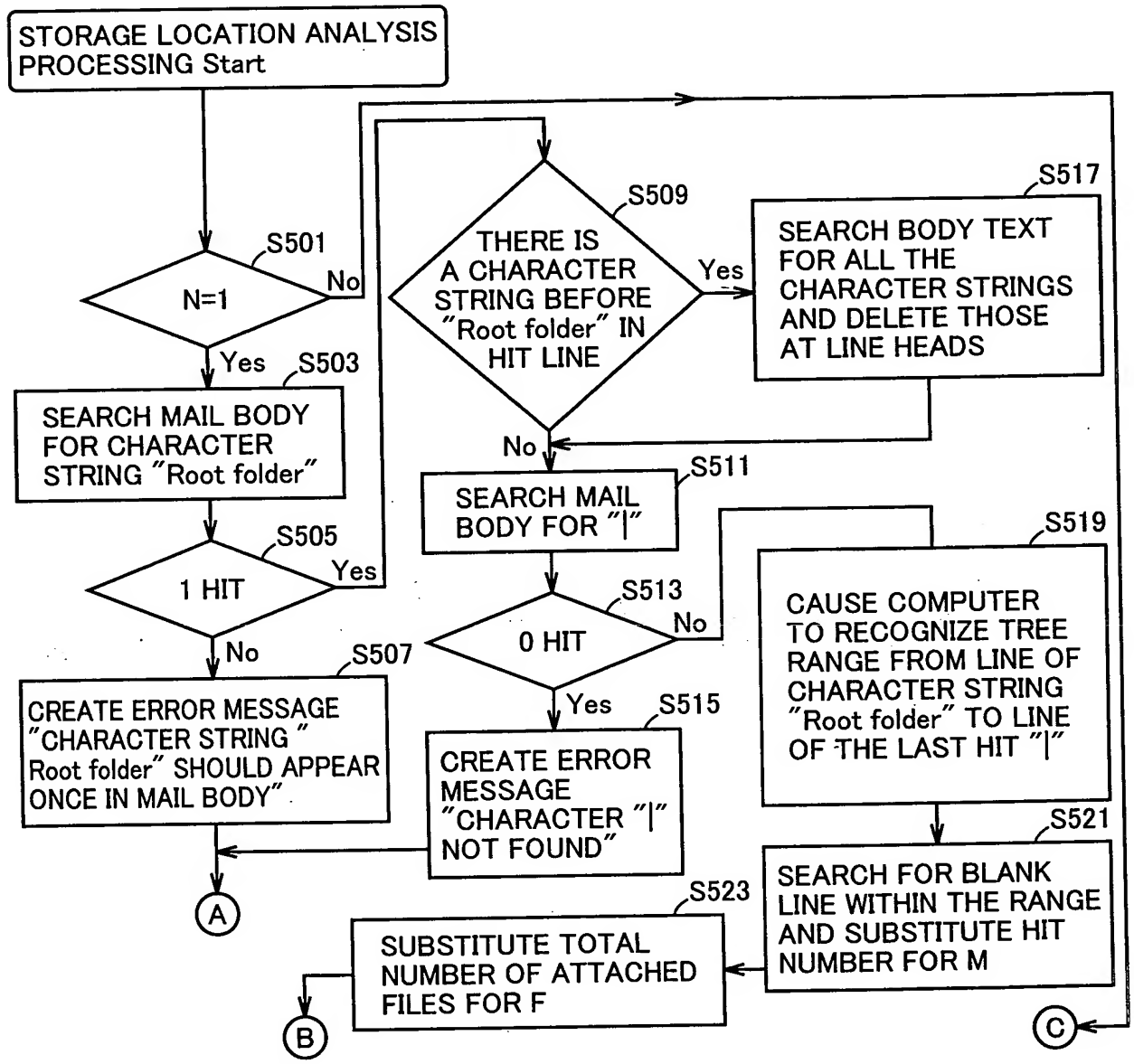

STORAGE LOCATION ANALYSIS PROCESSING Start
S501
N=1
No
Yes
S503
SEARCH MAIL BODY FOR CHARACTER STRING "Root folder"
S505
1 HIT
Yes
No
S507
CREATE ERROR MESSAGE "CHARACTER STRING " Root folder" SHOULD APPEAR ONCE IN MAIL BODY"
A
S509
THERE IS A CHARACTER STRING BEFORE "Root folder" IN HIT LINE
Yes
S517
SEARCH BODY TEXT FOR ALL THE CHARACTER STRINGS AND DELETE THOSE AT LINE HEADS
No
S511
SEARCH MAIL BODY FOR "|"
S513
0 HIT
No
Yes
S515
CREATE ERROR MESSAGE "CHARACTER "|" NOT FOUND"
S519
CAUSE COMPUTER TO RECOGNIZE TREE RANGE FROM LINE OF CHARACTER STRING "Root folder" TO LINE OF THE LAST HIT "|"
S521
SEARCH FOR BLANK LINE WITHIN THE RANGE AND SUBSTITUTE HIT NUMBER FOR M
S523
SUBSTITUTE TOTAL NUMBER OF ATTACHED FILES FOR F
B
C

FIG.21

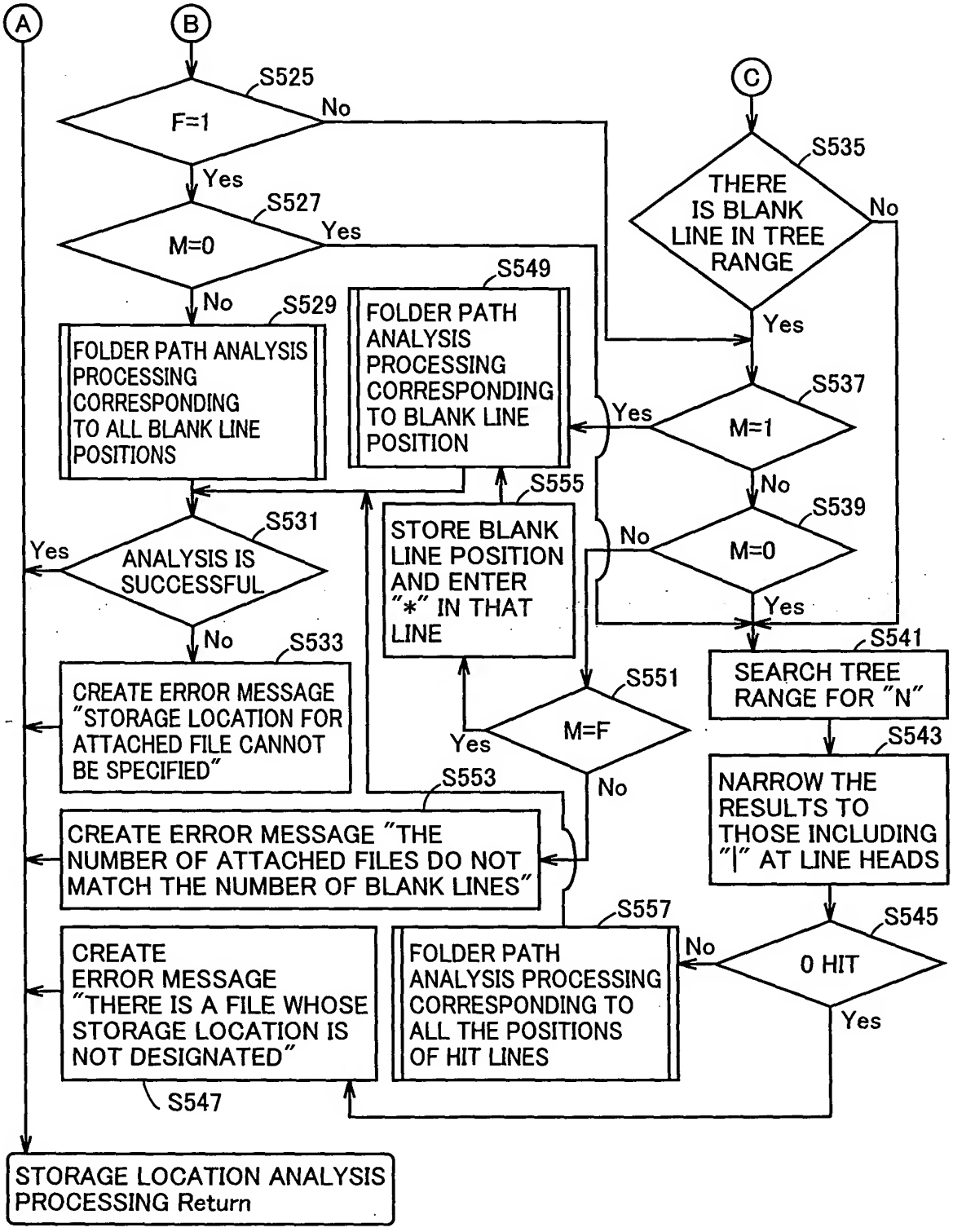

A
B
C
S525
F=1
No
Yes
S527
M=0
Yes
No
S529
FOLDER PATH ANALYSIS PROCESSING CORRESPONDING TO ALL BLANK LINE POSITIONS
S549
FOLDER PATH ANALYSIS PROCESSING CORRESPONDING TO BLANK LINE POSITION
S531
ANALYSIS IS SUCCESSFUL
Yes
No
S533
CREATE ERROR MESSAGE "STORAGE LOCATION FOR ATTACHED FILE CANNOT BE SPECIFIED"
S555
STORE BLANK LINE POSITION AND ENTER "*" IN THAT LINE
S551
M=F
Yes
No
S553
CREATE ERROR MESSAGE "THE NUMBER OF ATTACHED FILES DO NOT MATCH THE NUMBER OF BLANK LINES"
S557
FOLDER PATH ANALYSIS PROCESSING CORRESPONDING TO ALL THE POSITIONS OF HIT LINES
CREATE ERROR MESSAGE "THERE IS A FILE WHOSE STORAGE LOCATION IS NOT DESIGNATED"
S547
STORAGE LOCATION ANALYSIS PROCESSING Return
S535
THERE IS BLANK LINE IN TREE RANGE
No
Yes
S537
M=1
Yes
No
S539
M=0
No
Yes
S541
SEARCH TREE RANGE FOR "N"
S543
NARROW THE RESULTS TO THOSE INCLUDING "|" AT LINE HEADS
S545
0 HIT
No
Yes

FIG.22

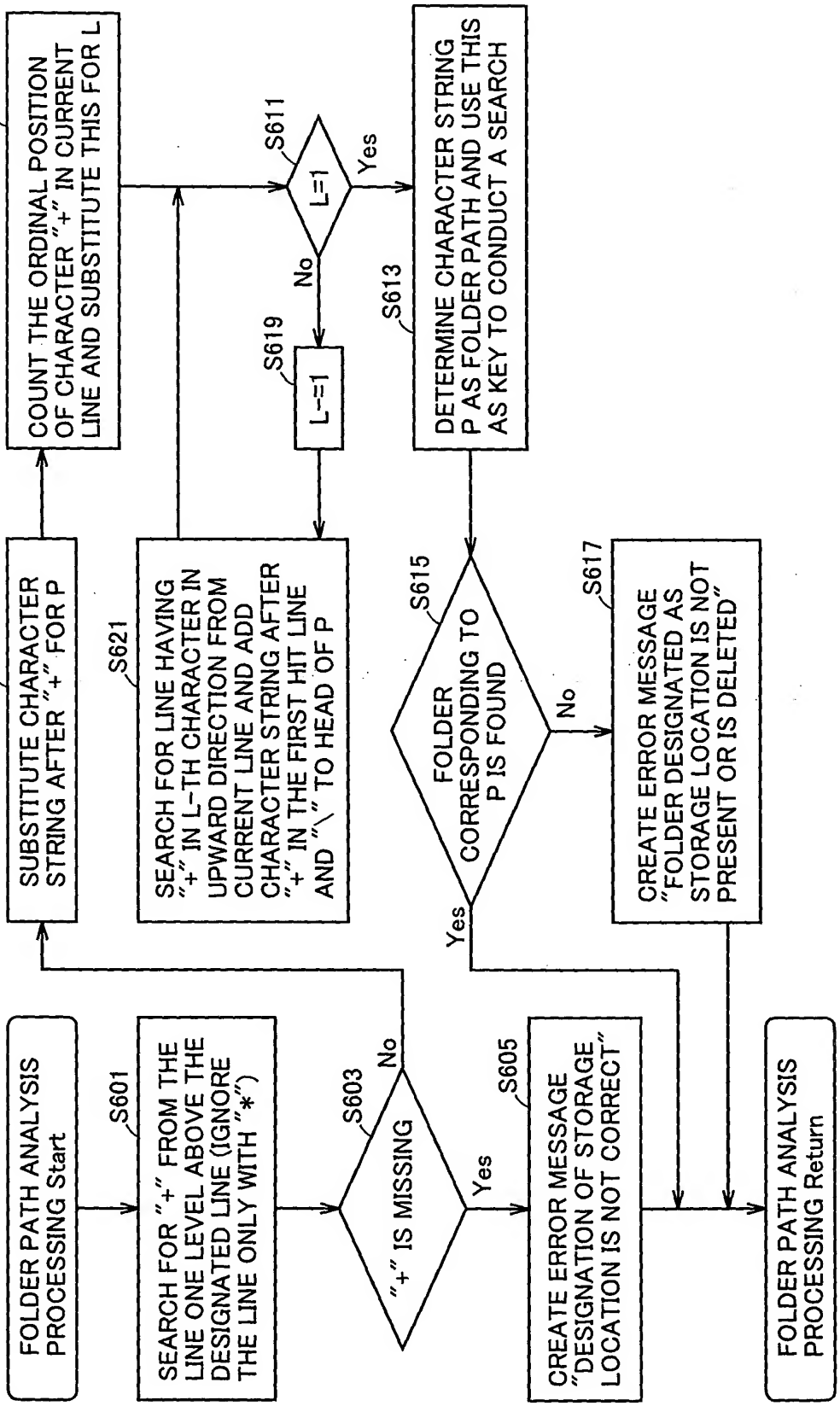

FOLDER PATH ANALYSIS PROCESSING Start
S601
SEARCH FOR "+" FROM THE LINE ONE LEVEL ABOVE THE DESIGNATED LINE (IGNORE THE LINE ONLY WITH "*")
S603
"+" IS MISSING
No
Yes
S605
CREATE ERROR MESSAGE "DESIGNATION OF STORAGE LOCATION IS NOT CORRECT"
FOLDER PATH ANALYSIS PROCESSING Return
S607
SUBSTITUTE CHARACTER STRING AFTER "+" FOR P
S609
COUNT THE ORDINAL POSITION OF CHARACTER "+" IN CURRENT LINE AND SUBSTITUTE THIS FOR L
S611
L=1
Yes
No
S613
DETERMINE CHARACTER STRING P AS FOLDER PATH AND USE THIS AS KEY TO CONDUCT A SEARCH
S615
FOLDER CORRESPONDING TO P IS FOUND
No
Yes
S617
CREATE ERROR MESSAGE "FOLDER DESIGNATED AS STORAGE LOCATION IS NOT PRESENT OR IS DELETED"
S619
L-=1
S621
SEARCH FOR LINE HAVING "+" IN L-TH CHARACTER IN UPWARD DIRECTION FROM CURRENT LINE AND ADD CHARACTER STRING AFTER "+" IN THE FIRST HIT LINE AND "\" TO HEAD OF P

FIG.23

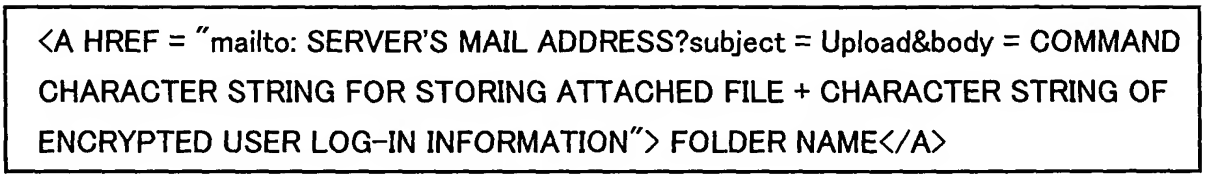
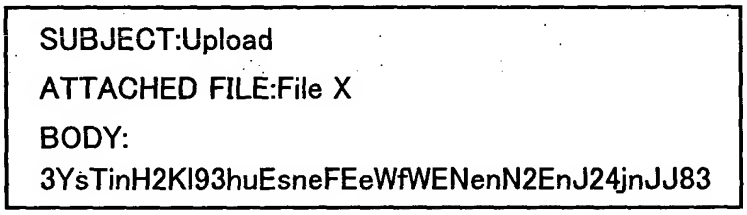

<A HREF = "mailto: SERVER'S MAIL ADDRESS?subject = Upload&body = COMMAND CHARACTER STRING FOR STORING ATTACHED FILE + CHARACTER STRING OF ENCRYPTED USER LOG-IN INFORMATION"> FOLDER NAME</A>

FIG.24


SUBJECT:Upload
ATTACHED FILE:File X
BODY:
3YsTinH2Kl93huEsneFEeWfWENenN2EnJ24jnJJ83